

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1-16. (canceled)

17. (currently amended) A structured document processing system comprising:

a network composed of a server device and a plurality of client devices,

the server device storing a structured document composed of a plurality of elements which are hierarchically organized in a tree structure, each of the elements being a constituent unit of the structured document, and each of the client devices storing a duplication of the structured document,

the server device comprising,

an update manager for managing an update of the structured document using an updated minimum element of the structured document, wherein a top node of the updated minimum element is provided that is marked with a transfer object flag and update time information, the updated minimum element including an updated portion of the structured document, and

a transmission section that identifies for transmission the updated minimum element based on a location of the transfer object flag within the tree structure and transmits the

identified updated minimum element and its update time information to one of the client devices, wherein each of the client devices updates a corresponding minimum element of the structured document currently stored in the client device depending on whether the update time of the received update time information is later than a last update time of the structured document currently stored in the client device.

18. (previously presented) The structured document processing system according to claim 17, wherein the update manager instructs the transmission section to transmit the updated minimum element of the structured document when the structured document has been updated.

19. (previously presented) The structured document processing system according to claim 17, wherein the update manager instructs the transmission section to transmit update information to one of the client devices when the structured document has been updated, the update information including identification information identifying the updated minimum element of the structured document.

20. (original) The structured document processing system according to claim 17, wherein the update manager manages the update of the structured document using an update time at which the update of the structured document occurs,

wherein, when an update occurs at the node, the update manager instructing the transmission section to transmit update

information to a client device, the update information including the update time.

21. (original) The structured document processing system according to claim 20, wherein, when a client device receives the update information from the server device, the client device updates the structured document stored therein based on the update information received.

22. (original) The structured document processing system according to claim 21, wherein each of the client devices comprises:

a comparator for comparing the update time of the update information received is later than an updated time of the structured document currently stored therein; and

a transmission controller for requesting transfer of an updated minimum element of the structured document when the update time of the update information received is later than the updated time of the structured document currently stored therein.

23. (original) The structured document processing system according to claim 17, wherein the update manager transmits an updated minimum element of the structured document to a client device at a plurality of predetermined times.

24. (original) The structured document processing system according to claim 17, wherein the update manager transmits update information to the client device at a plurality of predetermined times, the update information including

identification information identifying an updated minimum element of the structured document.

25. (original) The structured document processing system according to claim 24, wherein the update manager manages the update of the structured document using an update time at which the update of the structured document occurs, the update information further includes the update time.

26. (original) The structured document processing system according to claim 17, further comprising:

a gateway server device performing protocol processing between the server device and each of the client devices,

wherein the server device transmits update information indicating that the structured document is updated to the gateway server device,

wherein the gateway server device comprises:

an structured document manager for managing the duplication of the structured document stored in the client device;

an update information receiver for receiving update information from the server device; and

an update controller for transmitting the update information received from the server device to the client device.

27. (original) The structured document processing system according to claim 26, wherein the update controller transmits the update information received from the server device to the client device at a plurality of predetermined times.

28. (original) The structured document processing system according to claim 26, wherein, when a client device receives the update information from the gateway server device, the client device updates the duplication of the structured document stored therein based on the update information received.

29. (original) The structured document processing system according to claim 28, wherein each of the client devices comprises:

a comparator for comparing the update time of the update information received is later than an updated time of the structured document currently stored therein; and

a transmission controller for requesting transfer of an updated minimum element of the structured document when the update time of the update information received is later than the updated time of the structured document currently stored therein.

30. (original) The structured document processing system according to claim 17, further comprising:

a gateway server device performing protocol processing between the server device and each of the client devices,

wherein the server device transmits update information including an update time and the updated minimum element to the gateway server device,

wherein the gateway server device comprises:

an structured document storage for storing the duplication of the structured document stored in the client device;

an structured document manager for managing the duplication of the structured document for the client device and an update time thereof;

an update information receiver for receiving the update information from the server device; and

an update controller for transmitting the updated minimum element of the structured document to a client device having the update time of the structured document stored therein, which is later than the update time included in the update information received from the server device.

31-46. (canceled)

47. (currently amended) A structured document updating method in a network composed of a server device and a plurality of client devices, the server device storing a structured document composed of a plurality of elements which are hierarchically organized in a tree structure, each of the elements being a constituent unit of the structured document, and each of the client devices storing a duplication of the structured document, the method comprising the steps of:

at the server device,

a) managing an update of the structured document composed of the plurality of elements which are hierarchically organized in the tree structure using an updated minimum element of the structured document, wherein a top node of the updated minimum element is provided with a transfer object flag and update time

~~information that is marked with a transfer object flag, the updated minimum element including an updated portion of the structured document; and~~

b) identifying for transmission the updated minimum element based on a location of the transfer object flag within the tree structure and transmitting the identified updated minimum element and its update time information to the client devices, and

at a client device receiving the updated minimum element and its update time information,

c) updating a corresponding minimum element of the structured document currently stored in the client device depending on whether the update time of the received update time information is later than a last update time of the structured document currently stored in the client device.

48-50. (canceled)

51. (currently amended) The structured document updating method according to claim [[50]]47, wherein the step (c) comprises the steps of:

~~determining whether the update time of the update information received is later than an updated time of the structured document currently stored therein; and~~

when the update time of the update time information received is later than an updated time of the structured document currently stored therein, requesting transfer of [[an]] the updated minimum element of the structured document.

52. (original) The structured document updating method according to claim 47, wherein an updated minimum unit of the structured document is transmitted to the client devices at a plurality of predetermined times.

53. (original) The structured document updating method according to claim 47, wherein update information is transmitted to the client devices at a plurality of predetermined times, the update information including identification information identifying an updated minimum unit of the structured document.

54. (canceled)

55. (currently amended) The structured document updating method according to claim 47, wherein the network further comprises a gateway server device performing protocol processing between the server device and each of the client devices,

the method further comprising the steps of:

at the gateway server device,

[[c]] d) managing the structured document stored in each of the client devices;

[[d]] e) receiving an update information from the server device; and

[[e]] f) transmitting the update information received from the server device to a client device.

56. (currently amended) The structured document updating method according to claim 55, wherein in the step [[(e)]](f), the

update information received from the server device is transmitted to the client device at a plurality of predetermined times.

57. (canceled)

58. (currently amended) The structured document updating system according to claim [[57]]56, further comprising the steps of:

at the client device,

~~determining whether the update time of the update information received is later than an updated time of the structured document currently stored therein; and~~

when the update time of the update time information received is later than an updated time of the structured document currently stored therein, using the identification information to request transfer of [[an]] the updated minimum unit of the structured document from the gateway server device.

59. (original) The structured document updating system according to claim 47, wherein the network further comprises a gateway server device performing protocol processing between the server device and each of the client devices,

the method further comprising the steps of:

at the gateway server device,

storing the structured document stored in each of the client devices in an information storage;

managing the structured document for each of the client devices and an update time thereof;

receiving an update information from the server device at which an update of the structured document occurs;

selecting a client device having the update time of the structured document stored therein, which is later than the update time included in the update information received from the server device; and

transmitting the updated minimum unit of the structured document identified by the identification information included in the update information received from the server device, to the selected client device.

60. (canceled)

61. (currently amended) A storage medium storing a computer program for updating a structured document in a network composed of a server device and a plurality of client devices, the server device storing a structured document composed of a plurality of elements which are hierarchically organized in a tree structure, each of the elements being a constituent unit of the structured document, and each of the client devices storing a duplication of the structured document, the computer program at the server device, comprising the steps of:

a) managing an update of the structured document composed of the plurality of elements which are hierarchically organized in the tree structure using an updated minimum element of the structured document, wherein a top node of the updated minimum element is provided that is marked with a transfer object flag

and update time information, the updated minimum element including an updated portion of the structured document; and

b) identifying for transmission the updated minimum element based on a location of the transfer object flag within the tree structure and transmitting the identified updated minimum element and its update time information to the client devices,

wherein each of the client devices updates a corresponding minimum element of the structured document currently stored in the client device depending on whether the update time of the received update time information is later than a last update time of the structured document currently stored in the client device.

62. (new) A server device in a structured document processing system comprising a plurality of client devices,

the server device storing a structured document composed of a plurality of elements which are hierarchically organized in a tree structure, each of the elements being a constituent unit of the structured document, and each of the client devices storing a duplication of the structured document,

the server device comprising,

an update manager for managing an update of the structured document using an updated minimum element of the structured document, wherein a top node of the updated minimum element is provided with a transfer object flag and update time information, the updated minimum element including an updated portion of the structured document, and

a transmission section that identifies for transmission the updated minimum element based on a location of the transfer object flag within the tree structure and transmits the identified updated minimum element and its update time information to the client devices.

63. (new) A client device in a structured document processing system comprising a server device that stores a structured document composed of a plurality of elements which are hierarchically organized in a tree structure, each of the elements being a constituent unit of the structured document, the client device storing a duplication of the structured document,

wherein the server device manages an update of the structured document using an updated minimum element of the structured document, wherein a top node of the updated minimum element is provided with a transfer object flag and update time information, the updated minimum element including an updated portion of the structured document, and wherein the server device identifies for transmission the updated minimum element based on a location of the transfer object flag within the tree structure and transmits the identified updated minimum element and its update time information to the client device,

the client device comprising,

a comparator for comparing the update time of the update time information received from the server device and a last update time of the structured document currently stored therein

to determine whether the update time of the update time information is later than the last update time; and

a transmission controller for requesting transfer of the updated minimum element of the structured document when the update time of the update time information received is later than the updated time.